
Walter Belik

Núcleo de Estudos e Pesquisas
em Alimentação, Universidade
Estadual de Campinas,
Campinas, Brasil.
belik@eco.unicamp.br

Food insecurity in countries with low development: new trends

The authors present evidence from the 2006 *Brazilian Demographic and Health Survey* (DHS) that the nutrition transition in Brazil is characterized by a significant prevalence of obese and overweight adolescent girls and adult women in families with food insecurity. The prevalence rates for children were also calculated, but the results cannot be considered robust, since the physiological characteristics of the pediatric population present high energy requirements for growth, thus making children more resistant to accumulation of body fat. These conclusions allow stating that Brazil is entering a phase of the nutrition transition wherein obesity rates are higher than underweight rates among poor women.

According to Popkin ¹, the nutrition transition was preceded by two historical processes: the demographic transition and the epidemiological transition. Analyzing the case of Brazil, it appears evident that all the phenomena identified by Popkin as resulting from the demographic transition, like urbanization, technological changes that impact the work process, reduction in physical activity in the population, and growth in the consumption of obesogenic foods are present in the country.

In Brazil, as in most developing countries, new eating habits and changes in the diet's quality have directly impacted adults' body composition, demonstrating the possibility of coexistence of underweight and overweight/obesity in the low-income population.

In fact, considering only monetary income, the only criterion for defining poverty in the majority of studies, in Brazil the urban areas concentrate the majority of the non-poor population (in relative terms). Urban areas also have most of the occupations that require less physical effort, even among the worst-paid professional activities. Finally, the intake of energy-dense industrialized foods is proportionally greater among low-income families, given their more affordable prices as compared to fruits, vegetables, and leafy vegetables.

The latter element is illustrated by a recent study by Hoffmann ² based on data from the *Family Budget Survey* 2008-2009 (POF) calculating income elasticity for food consumption. Dividing the population into three strata with stratum I as the poorest shows an elasticity of 0.250 for cereals, legumes, and oilseeds; 0.018 for flour, starches, and pasta; 0.410 for meats,

organ meats, and fish; and 1.105 for prepared foods, focusing only on these four examples. These figures show that increasing income (as observed in recent years) accelerates the demand for industrialized foods, increasing their share in the low-income population's food basket. By way of comparison, the income elasticity for prepared foods in stratum III (with the highest income) was 0.371, denoting profound differences in the food intake structure in the various family income strata in Brazil.

Several important conclusions deserve attention in the study entitled *A Política Social Brasileira na Primeira Década do Século XXI e a Dinamização Econômica e Sustentabilidade das Regiões e Territórios* (Brazilian Social Policy in the First Decade of the 21st Century and Economic Dynamization and Sustainability of Regions and Territories) (Call for Research Projects MCT/CNPq/MDS-SAGI no. 36/2010, recently concluded but still unpublished), analyzing the situation of poor families according to their nutritional status based on data from the POF. The definition of poor included all individuals with a real monthly per capita family income less than BR\$70.00 (approximately US\$35.00) in 2011. This amount corresponds to the poverty line set by the Brazil Without Poverty Plan and roughly to the World Bank poverty line of US\$1.25 per capita/day.

Families were divided into poor and non-poor, and two criteria were applied for indirect evaluation of food security: the limits established by calculating body mass index (BMI) and per capita daily calorie consumption³. Based on these criteria, we found 193,283 poor families with at least one member with BMI below 18.5kg/m² and with at least one adult over 19 years of age with calorie insufficiency. This total can be represented by the 6.3% proportion of all poor families identified by the survey in the year 2009. Among non-poor families, 4.1% had at least one member with BMI below 18.5kg/m² and at least one adult over 19 years of age with calorie insufficiency.

A comparison of these two proportions shows that poverty is an aggravating factor for underweight and calorie malnutrition, but that the situation of the non-poor is also quite worrisome. However, a broader look at monetary poverty shows that living conditions are particularly serious in this population with stronger indicators of underweight and malnutrition. According to the results, in 2009 among this group of families with high vulnerability, only 55.5% had indoor running water, and only 35.1% had sewage connections or a septic tank, conditions that could particularly explain the problems of underweight and malnutrition in this population.

The absolute number and proportion of families with at least one adult member with obesity also deserves attention and demonstrates the high incidence of this condition in poor families, while the rate is still higher among non-poor families. According to the results, 466,000 poor families had at least one obese adult member (15.2% of the total). Among non-poor families, 23.5% had one or more obese members (14.5 million families in absolute terms in 2009). The result was calculated from the BMI of family members 19 years or older.

The number of obese Brazilians increased by 54% in six years (2003 to 2009), from 9.7 million to 15 million, but the obesity rate is lower among the poor than the non-poor. In 2003, 18.8% of non-poor and 3.6% of poor Brazilians were obese. By 2009, these rates had increased to 24.7% and 13.6%, respectively (*A Política Social Brasileira na Primeira Década do Século XXI e a Dinamização Econômica e Sustentabilidade das Regiões e Territórios*; op. cit.).

In statistical terms, it was not possible to combine this information with the food security evaluation conducted by the Brazilian Institute of Geography and Statistics (IBGE), since the dates fail to coincide between the POF and the supplements with the food security survey based on the *Brazilian Food Insecurity Scale* (EBIA), published in the *Brazilian National Household Sample Survey* (PNAD). In addition, the POF is calculated on the basis of the situation of families, while the PNAD works with households. Use of the DHS thus represents an advancement and important tool for evaluation of the nutritional situation of individuals in families from two complementary perspectives.

However, one methodological aspect could lead to lack of precision in some results. The EBIA questionnaire is answered by one person, usually the head of household, who informs his or her perception of the food security conditions for the various persons living in the household, including children. This information is based on a three-month recall. Meanwhile the BMI information is calculated from objective anthropometric variables collected directly from the household members.

Considering that overweight or obesity does not develop in the short term, and that in the case of adult women it develops over the course of months or years of inadequate eating and physical inactivity, it does not appear appropriate to compare situations that have occurred in different time frames. In this case, a situation may occur in which a poor family with overweight or obese women experienced difficulties in the months prior to the survey, leading to

overestimation of the relationship between the two indicators.

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 3. Institute of Medicine of the National Academies. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids (macronutrients). http://www.nap.edu/openbook.php?record_id=10490&page=R1 (accessed on 13/Jan/2011).
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